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ABSTRACT

The skills taught in the Cognitive Research Trust (CoRT) program and the Instrumental Enrichment (IE) program are unlikely to transfer to thinking in the regular curriculum. The exercises in these programs might be fun to do, but the thinking required is done outside the context of significant subject matter in the humanities and the sciences. The conclusion that the skills are not transferable is based on 20 of the 24 criteria established in the monograph "Toward Intellectual Excellence: Some Things To Look for In Classrooms and Schools." These criteria integrate thinking within the school subjects, while the CoRT program and the IE program create their own subject matter in isolation. The CoRT program teaches 60 skills and can be used with students from age 6 to adult because thinking skills are the same for any age, according to CoRT's developers. However, it is the position of this paper that CoRT's content is superficial and gimmicky. Instrumental Enrichment loses itself in the Platonic universe of abstract geometric shapes--70% of the content in IE deals with pristine geometric figures and spatial orientation. If the practical problem in CoRT and IE is transfer, the theoretical problem is their error in defining thinking as "skill." Thinking is a process and not an object that can be defined by its parts. Thought, like a child, is best nurtured in its "family setting" of socially significant subject matter and the problems that arise in the course of living. (Contains one note and seven references.) (RS)

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WHY THE CoRT AND INSTRUMENTAL ENRICHMENT THINKING SKILLS PROGRAMS WILL NOT IMPROVE THINKING

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Here is a riddle: What do Australian rabbits and making figures out of dots have in common? Answer: Rabbits and dots are part of the content to teach thinking in the CoRT and Instrumental Enrichment thinking skills programs. These programs are part of the quest in the 1980s to discover mind.

Thrush (1987) analyzed the CoRT and the Instrumental Enrichment (IE) programs. This article is based on his analysis. CoRT was developed by Edward deBono in England. Instrumental Enrichment was developed by Reuven Feuerstein, a psychologist in Israel.

How good are these programs?

Both CoRT and IE are deficient in two critical respects: (1) the discrete thinking skills taught in these programs are unlikely to improve students' thinking in school subjects; and, (2) their concept of "thinking as skills" is wrong in theory.

We will briefly state some of the reasons that led us to the conclusion that the skills taught in these programs are unlikely to transfer to thinking in the regular curriculum before we continue with our assessment of the CoRT and IE programs.

What has the organization of dots into geometric shapes, exercises in the Instrumental Erichment program, have to do with generating possible explanations for the data collected in a science experiment? What does predicting the consequences of a fool-proof device to tell if someone is lying, an exercise in CoRT, have to do with writing an interpretation of Willie Loman's character in Death of A Salesman? These exercises might be fun to do, but the thinking required is done outside the context of significant subject matter in the humanities and the sciences.

None of the materials that we examined for either CoRT or IE, including research studies, gives a consistent body of evidence that the skills taught in these programs transfer to the curricular mainstream. The skills taught in these programs have no life beyond themselves. The introduction of these programs in schools will do little more than add two more subjects to a curriculum that is already atomized by short periods and too many subjects.

We will now discuss our assessment of CoRT and IE in more detail. The criteria used will be stated. The learning exercises in the two programs will be described. A summary report of research studies on IE will be critically reviewed. The preceding topics deal primarily with the practical question of transfer. We turn last to the definition of thinking as skills used in these programs which is the reason that the question of transfer arises in the first place.

The criteria used in the assessment are discussed below.

Our judgment that the skills taught in CoRT and IE will not transfer to thinking in school subjects and that the root problem in both curricula is that of defining thinking as "thinking skills," is based on 20 of 24[1] criteria in Toward Intellectual Excellence: Some Things to Look For in Classrooms and Schools(TIE) (Gibboney 1980). The criteria in TIE are based on Dewey's comprehensive theory. This theory holds that thinking should permeate all learning in the school subjects because thinking is the means to intelligent learning. Dewey's theory also says that the critical criterion for the selection of subject matter is its social significance; i.e, what is learned in school should have an ultimate influence on maintaining and improving our democratic society.

TIE formally states each criterion and gives examples of what teachers and students would do if the criterion were acted on. The criteria are interactive and collectively support thinking because they are drawn from a holistic theory of learning and teaching that places a primary value on cultivating intelligence. The criteria in TIE are listed for convenience under four categories: objectives, subject matter, thinking and experience, and teaching method. The use of TIE criteria require a qualitative assessment. The criteria are not scored to produce a number.

Examples of some of the criteria are given below. The explanations are not complete. It is important to remember that our assessment of CoRT and IE reflects the complementary effects of 20 criteria. A negative judgment on a single criterion, or even several, would not make a significant difference in our judgment because the criteria are holistic (each criterion

develops a facet of one internally consistent theory). Each criterion is numbered as it appears in TIE.

Criterion 3 Objectives are tentative....Objectives can be modified by the teacher or the learner as the process of learning unfolds.

Learning and teaching are complex processes that involve many variables that simultaneously interact. Planning is important but planning should not restrict the teacher's flexibility about aims, content, and process. Teachers should be free, in other words, to change more than the details of a given curriculum.

Criterion 20 Problems are selected for (thinking)...that are (initially) within the experience of the learner...(and are) related to the problems of (social) life....

New learning must be related to past learning. Past learning includes both formal "school" knowledge and knowledge learned through life experience. New learning must be integrated with past learning (what Piaget calls assimilation). This integration is the bridge of continuity that is essential for thinking. This is the educative means to the problem of transfer.

Criterion 15 The cultivation of thinking is the primary goal of instruction.

All of the criteria speak to the many aspects of this aim. Some of the ideas used to explain this criterion are discussed when we argue that to define thinking as "skill" negates thinking in the school subjects and life situations.

Criterion 16 Meaning is seeing the continuities and connections within one's experience.

Criterion 16 speaks to a complex idea the facets of which are in many of criteria. This idea cannot be clearly stated in a few sentences. We give an example instead. A graduate student has read scholarly critiques of positivism as a philosophy of research.

She sees this tradition historically from Newton through behavioristic psychology to its application today in X teaching method. As a graduate student she rejects positivism. One month later X teaching method is being reviewed in her principals' council. She endoreses X method for reasons that contradict her reasons for rejecting it in her other role. This principal is not making connections that enhance continuity within her (total) experience. She is not constructing meaning in a coherent way. Can "meaning" be incoherent?

Is TIE a worthwhile way to analyze curricula? It may be. Ariav (1983) evaluated 45 curriculum analysis instruments on theoretical and practical criteria. TIE placed among the top five.

In Thrush's study (1987) CoRT and IE were assessed criterion-by-criterion through the 20 criteria used from TIE. The cumulative effect of this analysis across criteria revealed a consistent and wide disparity between the demands of the criteria and the educational stance of the two programs. The disparities are educationally significant. First, the TIE criteria integrate thinking within the school subjects which is the culture's definition of socially important subject matter. (CoRT and IE create their own subject matter in isolation from that defined by the culture as important.) Second, the criteria place the content-to-be-studied in a democratic social situation in which teachers and students exercise choices (which is one type of thinking) about the ends and means of learning. This is also practical learning in democratic governance. (CoRT and IE offer limited choices to teachers and students about socially irrelevant content and ignore democratic governance.) And third, the criteria value the integration of new learning with past learning which increases the meaning of the new learning.
(CoRT and IE cannot do this because their content is unique and isolated from school subjects.)

Some say, "But CoRT and IE were not meant to do these things." They were not. And that is the point. The wide disparities revealed between the criteria and the two programs is a

measure of what is lost when partial solutions to complex problems are given based on partial theories. It is a measure also of what might be gained if solutions were advanced and tested based on more comprehensive and holistic theories. CoRT and IE want to play educational baseball by calling a hit to first base a homerun.

Summary descriptions of the CoRT and IE programs follow.

The CoRT thinking skills program teaches 60 skills. The 60 skills are divided into 10 units such as Breadth, Interaction, and Information and Feeling. The material can be used with students from age six to adult because thinking skills are the same for any age according to CoRT's developers. Each lesson is 35 minutes.

What skills does CoRT try to teach? In the unit on Breadth, for example, 10 skills are taught. Some of these skills deal with the ability to see as many factors as possible in a situation, generating alternatives and choices, and moving beyond one's viewpoint. The unit on Information and Feeling deals with stereotypes as substitutes for thinking and shows the effects of emotions in thinking that lead to saving face and to the need always to be right.

Each of the 60 skills is on one card for teacher use. The basic flavor of the CoRT learning process is clear from examining these skill cards. One skill taught is seeing the consequences of an invention or a decision. A 10-line example is given that shows the bad intermediate and long-term consequences of introducing rabbits to Australia (they damaged crops). The students are then asked to practice this skill by speculating about the consequences of introducing robots into factories, the use of a fool-proof device to tell when someone is lying, and the effects that might result in a community that changes from white to 50 percent black. The last section of the skill card lists five "principles" that relate to consequences such as their reversability, that other people may better see the consequences of one's actions than the person herself, and that one should do a full assessment of the consequences that might follow from an action.

CoRT claims that by using these exercises that its material is relevant to life experience. Other examples used include asking students to think about what would happen if all seats were

taken out of buses, the different points of view elicited by a train strike, and the priorities involved in deciding whether you like someone or not.

We see CoRT's content as superficial and gimmicky. CoRT's theory of "life experience" is so weak that no criteria in CoRT will permit one to choose between the eduational worth of history compared to tree climbing. If the intellect were honored rather than "thinking skills," the severe content deficiencies in CoRT would be self-evident.

While CoRT gets lost in the empiricism of rabbits and school bus seats, Instrumental Enrichment loses itself in the Platonic universe of abstract geometric shapes.

IE lists 21 "cognitive functions" that are taught through 14 instruments over three years. The program is designed for grades 5 through 12. The titles of these instruments include the following which were chosen by taking every second title through the sequence: Orientation in Space 1, Analytic Perception, Instructions, Numerical Progressions, Illustrations, Syllogisms, and Orientation in Space 11. Analytic Perception and Syllogisms involve geometric shapes.

Organization of Dots, the first instrument in the program, is to teach the student "to organize dots into model figures according to a rule or rules" and to make a plan to achieve an objective. The "inputs" for this task consist of seven elements such as the use of cues and changes in the spatial orientation of the figures; six elements are given under Elaboration that include dot selection relevant to the figure sought; four "outputs" are listed such as the need for precision; a vocabulary list of 35 words is given (Feuerstein 1978).

The research on IE is murky (is this not the usual case?). Most studies failed to find clear effects and are difficult to interpret. Some studies found clear effects. Gains were found in nonverbal intelligence as measured by tests such as the Lorge-Thorndike and the Raven Matrices that assess skill in processing figural and spatial information. No effects or inconsistent effects were found in academic achievement, self esteem, and course content (Savell, Twohig, and Rachford 1986, pp. 401-402, our emphasis).

Savell et al. accept the validity of the content in IE and go to the research on effects.. We question IE's content on educational grounds based on a theory that values learning things that are intellectually meaningful and relevant to citizenship in a democracy. Perhaps 70 percent of the content in IE deals with pristine geometric figures and spatial orientation. IE seems too much like a geometric puzzle game. This kind of content might claim social significance if it were in the society's interest to raise everyone's score 30 points on a nonverbal intelligence test. Not one candidate for the presidency has suggested such an aim which says something about its social utility. One needs no empirical data to infer that the content in IE will not increase achievement in the course content studied in school. Geometric forms do not inform Whitman.

We return to our first conclusion: The skills taught in CoRT and IE are unlikely to transfer to thinking in the school subjects because their content is incompatible with that in school subjects.. What do bus seats and finding geometric figures in dots have to do with anything that matters? Will "skills" based on such content help a student to write a good essay or to construct some meaning of the Fourteenth Amendment?

The developers of CoRT and IE are aware that the skills they teach are difficult to transfer to thinking in the school subjects. Teachers are exhorted to teach for transfer. We believe that transfer is impossible because there is no fundamental and common intellectual element between the sterile content in these programs and the rich content in the subjects that make up our cultural heritage. One cannot walk across a bridge that is not there. It may appear to be "efficient" to develop and isolate a content called "thinking skills," but to do so violates fundamental educational principles.

If the practical problem in CoRT and IE is transfer, the theoretical problem is their error in defining thinking as "skill." We say in TIE that thinking involves skill but that thinking cannot be defined as skill. When the term "thinking skills" is used, deep in the mind is the impossible image "...that thinking skills are discrete, identifiable, and universal"

(Gibboney 1980, p. 73). The fact that CoRT and IE teach different thinking skills is evidence that these skills are not identifiable and universal as the phrase "thinking skills" suggests.

What, then, is the relationship of skill to thinking? We believe that skill is to thinking as the ability to write grammatically is to a good essay. Competence in grammar makes the essay better, but grammar alone generates no ideas nor does it determine style--two things that make the essay worth reading. To define an essay as grammar (or to define thinking as "skill") is to mistake the essential meaning of the whole for a part of the process that creates the whole. Thinking is a process and not an object that can be defined by its parts. To use language that obscures the essential reality of the thing to be dealt with destroys thinking. CoRT and IE have destroyed thinking in their attempts to define it and to teach it.

More than words separate the reality created by the phrase "thinking skills" and that created by Dewey's more fundamental and elegant phrase "the cultivation of intelligence."

Thinking must be about something that matters. Thinking does not exist outside of a particular human situation and a socially significant subject matter. The qualities that go with thought are as varied as the situations in which thought occurs. Because the qualities of thinking vary according to the situations that prompt thought, the derivation of a valid list of thinking skills is impossible. Thought, like children, is best nurtured in its "family setting" of socially significant subject matter and the problems that arise in the course of living. This is the difficult truth that disturbs. Thinking cannot be "boxed" and shipped around the country any more than democracy can be. Is it not better to accept the ambiguous truth that disturbs than to accept a false clarity that comforts?

NOTES

1. The criteria not used were 8, 12, 23, and 24 that deal with the intrinsic worth of objectives, the social importance of subject matter, what it means to know something, and the classroom and school environment as a factor in learning. The omission of these criteria was done to keep Thrush's analysis within a reasonable scope. Because of the inter-relatedness of the TIE criteria, the omission of these criteria does not adversely affect the conclusions drawn.

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